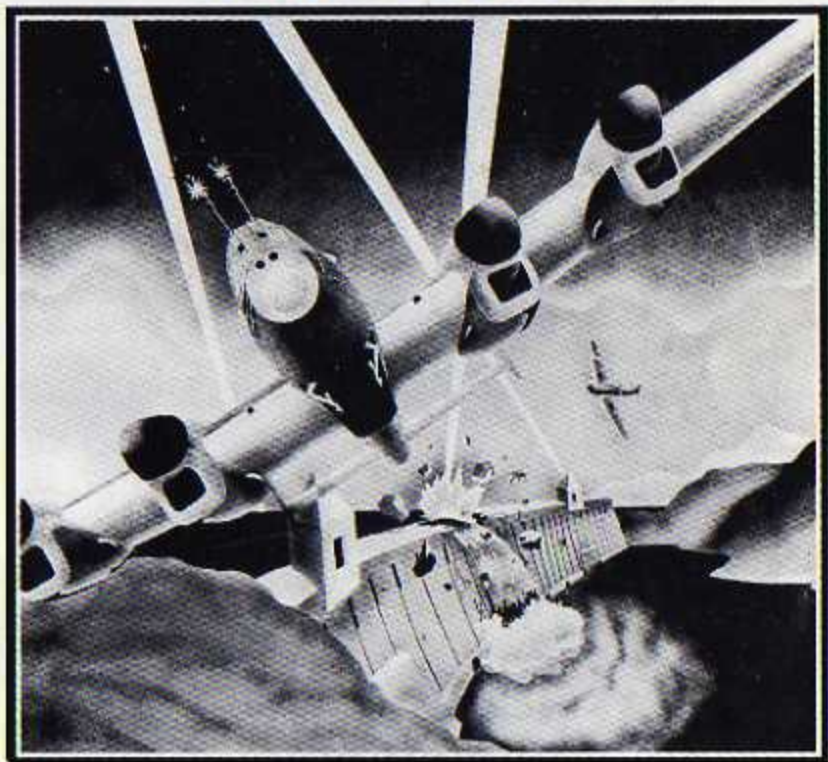




THE DAM BUSTERS™

TRAINING MANUAL



GETTING READY TO PLAY

ALWAYS MAKE SURE THE COLECOVISION® OR ADAM™ IS TURNED OFF BEFORE REMOVING OR INSERTING A CARTRIDGE.

One-Player Game: Plug the hand controller into Port 1.

Choosing Your Challenge

Press the Cartridge Reset Button. The Title Screen appears on your TV or monitor. Wait for the Option Screen to appear. Then choose which option you want to play by pressing the matching Keypad Button. If you're playing the Flight Lieutenant option, the Pilot Screen will appear. If you're playing the Squadron Leader option, the Intelligence Report will appear. You're ready to start your mission. Good luck.

There are no skill levels in The Dam Busters; however you can choose between two different play options:

- **Flight Lieutenant (Option 1):** Your mission starts over the English Channel. This is a good starting level and is recommended to players who do not have experience using a flight simulator or playing military simulation games. Run a few missions as a Flight Lieutenant to get the feel of the controls before trying the Squadron Leader option.
- **Squadron Leader (Option 2):** Your mission starts with a take off from Scampton Airfield. The Squadron Leader option is a more dangerous mission and requires more skill in game play. At the beginning of your mission, you'll receive an Intelligence Report from which you can plan your strategy. The Intelligence Report can include any of the following:

Radar Activity: Indicates whether enemy mobile radar installations have been moved and if the map for that area is incorrect.

Night Fighter Activity: Indicates the probability of encountering enemy night fighters.

Bombing Raid: Indicates that a large-scale night operation is taking place over a specified city. That area should be avoided as all air and ground defenses have been mobilized.

Flak Concentration: If the flak guns are warned by radar of your approach, you come under heavy attack. Since the flak guns were often moved from one area to another by rail, it's important to change your flight plan for each mission.

Taking Off: If you're playing the Squadron Leader Option, you start the mission by taking off from Scampton Airfield.

To take off: Set the flaps down and give engines full throttles and half boost. Press Keypad Button 1 to switch to the Pilot's screen. Wait for your airspeed to build up. (Your Airspeed Indicator will flash when ready.) After a short time, you'll be able to lift the tail by pressing the Control Stick up. Lift the tail section until the horizon is two-thirds down from the top of the screen. Don't lift the tail too high or you'll crash.

When the plane's altimeter shows an increase, the plane is taking off. Adjust the pitch (up and down motion) to level off at a constant altitude. (Perform this maneuver quickly to avoid stalling the plane.) Retract the landing gear and the flaps to increase airspeed. Lower the throttles and boosters as quickly as possible after take off to avoid over-revving the engine. Press the Control Stick down to start increasing altitude and you're off!

USING YOUR CONTROLS

Keypad Buttons:

Pressing Keypad Buttons 1-7 allows you to choose the crew position you want during game play.



**Keypad Button
1 = Pilot**



**Keypad Button
4 = Bomb Aimer**



**Keypad Button
2 = Front Gunner**



**Keypad Button
5 = Navigator**



**Keypad Button
3 = Tail Gunner**



**Keypad Button
6 = First Engineer**



**Keypad Button 7 = Second Engineer
(Squadron Leader only)**

When a crew position needs your attention, its number will flash at the bottom of your screen. Press the matching keypad button to switch to that crew position.

At the end of a mission, press Keypad Button * to return to the Option Screen; press Keypad Button # to replay the same option.

Side Buttons:

The use of the Side Buttons is explained throughout the How-To-Play section of this guide.

Control Stick:

The use of the Control Stick is explained throughout the How-To-Play section of this guide.

HERE'S HOW TO PLAY

The Time: Early Spring, 1943

The Mission: Bombing a dam deep inside Nazi Germany. If the mission is successful, several important power sources for the Reich will be destroyed and river traffic in the Ruhr Valley will come to a virtual standstill. An added bonus: The propaganda value of a successful mission will allow the Allies and the Underground to spread rumors about epidemics resulting from the flooding, water shortages and loss of firefighting capabilities.

The Plane: Lancaster B.MK I/III (The Dambuster).

The Bomb: A cylinder 60 inches long; 50 inches in diameter; 3/8-inch thick steel, weighing 2650 pounds and carrying 6600 pounds of Torpex underwater explosive.

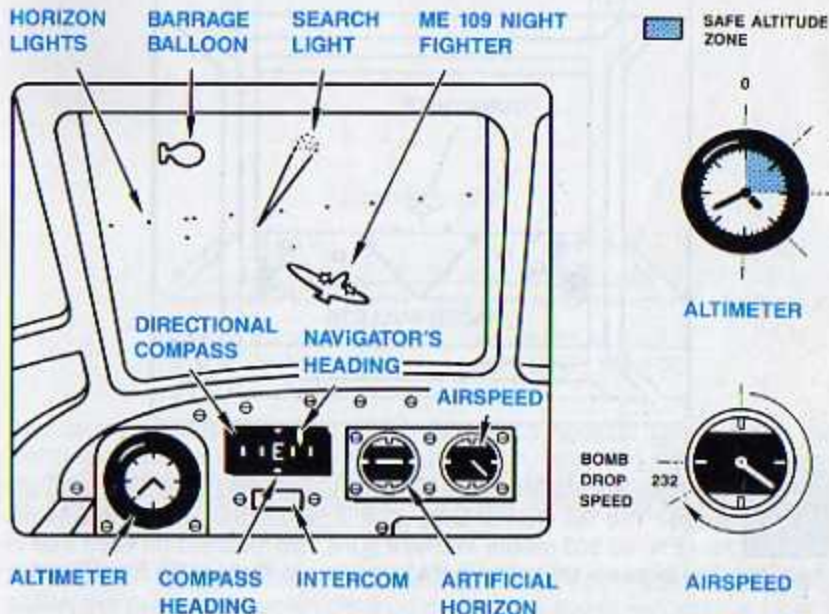
The Crew: You've been selected to fly the mission. Its success or failure and possibly the outcome of the war is in your hands.



PILOT: Press Keypad Button 1 and the Pilot's screen will appear. The Pilot screen controls the direction of the aircraft: left, right, up, down. The Control Stick simulates the joystick in the Lancaster. Pressing the Control Stick down (toward you) makes the plane go up; pressing the Control Stick up (away from you) makes the plane go down. Pressing the Control Stick left or right makes the plane move in the selected direction.

The Pilot's screen also contains a view of the horizon lights, enemy barrage balloons, searchlights and Me 109 night fighters. (A similar view also appears in the Front and Tail Gunners' screens).

Several instruments are also displayed on the Pilot's screen. The left side of the Pilot's screen contains the altimeter which measures how far the aircraft is off the ground. The altimeter shows two indicators. The smaller indicator measures altitude in 200-foot increments while the larger indicator measures altitude in 10-foot increments. When you see the intercom at the bottom of your screen blinking a numeral 1, it means you are flying too high. Drop your altitude to below 1000 feet.



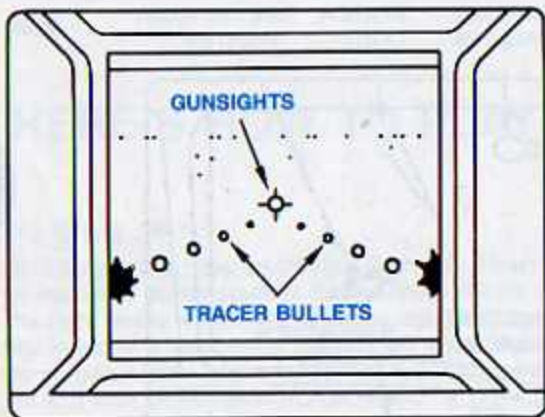
The second instrument from the left is the Directional Compass for the aircraft. It shows you what direction the plane is heading in relation to magnetic North. The small red marker that moves on top of the compass is the direction the navigator has set (see NAVIGATOR).

The next instrument is the Artificial Horizon indicator which shows what direction the aircraft is turning. This instrument is useful for night flying.

The Airspeed Indicator, on the far right, shows you how fast the plane is flying.



Front Gunner: Press Keypad Button 2 and the Front Gunner screen will appear. The Front Gunner sees what is ahead of the plane and controls the twin 303 calibre F.N.5 machine guns by guiding the cross hairs with the Control Stick and pressing the Left Side Button. The guns fire 20 rounds per second. Every fourth round fired from the guns is a tracer bullet which "glows" as it moves away from the plane to help determine direction and target.



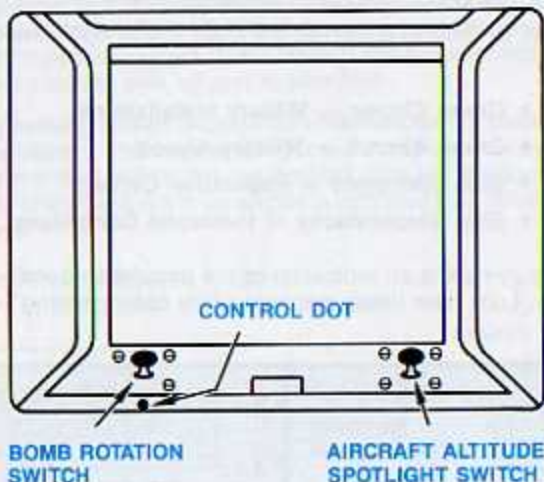
Tail Gunner: Press Keypad Button 3 and the Tail Gunner screen will appear. The Tail Gunner sees what is behind the plane and controls four F.N. 20 303 calibre machine guns, two mounted on each side of the turret. The guns are controlled in the same way as those of the Front Gunner.



Bomb Aimer: Press Keypad Button 4 and the Bomb Aimer screen will appear. Use the Bomb Aimer screen only on the dam approach. The instruments at the bottom of the screen are the Bomb Rotation switch and the Aircraft Altitude Spotlight switch.

To select a switch, move the Control Stick left or right. A black control dot appears under the selected switch. Press the Left Side Button to get control of the selected switch. With the Left Side Button held in, press the Control Stick down to turn the switch on or up to turn it off. Release the Left Side Button to release the control of the switch.

When the Spotlight switch is on and the altitude is less than 100 feet, press the Control Stick to adjust the altitude (up is less altitude; down is more altitude).



Just before the dam approach turn on the Bomb Rotation switch. When the bomb reaches maximum rotation (500 rpms), the distancing sights will appear on the Front Gunner's screen. These sights are used to determine the distance from the plane to the dam. Turning off the bomb rotation switch frees the Front Gunner to man the twin 303's.

When the two dam towers are the same distance apart as the bomb-distancing sights, the dam is the correct distance away. If the speed and altitude factors are also correct (see Dam Approach), release the bomb. To release the bomb: press the Left Side Button when the distancing sights are aligned with the dam towers.



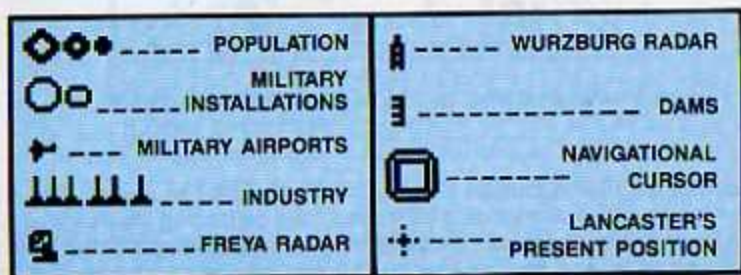
Navigator: Press Keypad Button 5 and the Navigator's screen will appear. There are six maps which display most of Northern Europe. Each map is selected by moving the navigational cursor toward a map edge. Pressing the Control Stick in the selected direction (up, down, left, right) controls where the navigational cursor goes on the displayed map. As soon as

the boundary of one map is reached, the next map will be displayed. If there are no more maps to select, the navigational cursor moves to the map edge and then stops.

The maps of Europe contain different colored symbols that represent the location and types of landmarks shown on the map. The symbols are classified as follows:

- **Green Circles** = **Military Installations**
- **Green Aircraft** = **Military Airport**
- **Blue Diamonds** = **Population Centers**
- **Blue Smokestacks** = **Industrial Complexes**

The size of the symbol is an indication of the population density and size of the installation. Look over these maps carefully before setting your course.



To view your present location in relation to the map on which you started the mission (Map 1 for the Squadron Leader Option; Map 2 for the Flight Lieutenant Option), press the Left Side Button.

On each map, you'll see two movable objects. One object indicates the plane's current position. The other object shows the navigational cursor that is used to set the compass heading. Pressing the Control Stick controls where the navigational cursor goes on the current map.

As you move the cursor around the screen, the heading will be reflected in the Pilot's screen and indicated by the red directional mark on the top of the pilot's compass. For example, if the cursor is directly above the position of the aircraft, the navigator's compass heading reads N (north).



Engineering: Press Keypad Button 6 and the First Engineering screen will appear; press Keypad Button 7 (Squadron Leader option only) and the Second Engineering screen will appear.

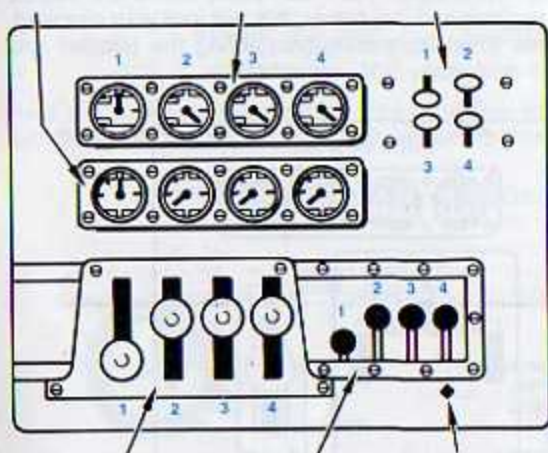
The engineer controls one or two screens, depending on which option you're playing: Flight Lieutenant (one screen) or Squadron Leader (two screens). The first screen controls the engines. This screen is the same for both options. The second screen controls take off and rudder trim.

The First Engineering screen displays four throttles, four booster controls, and four fire extinguishers. The booster gauges are the upper four dials. The lower four dials are the rpm gauges for the throttles. The fire extinguishers are the upper right set of knobs. A fire in an engine is indicated by a blinking rpm gauge for that engine.

THROTTLE
GAUGES

BOOSTER
GAUGES

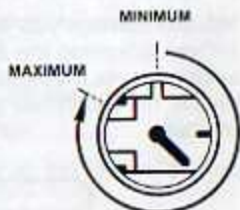
FIRE
EXTINGUISHERS



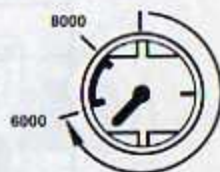
THROTTLES

BOOSTERS

CONTROL DOT



BOOSTER
GAUGE



THROTTLE
GAUGE (RPM)

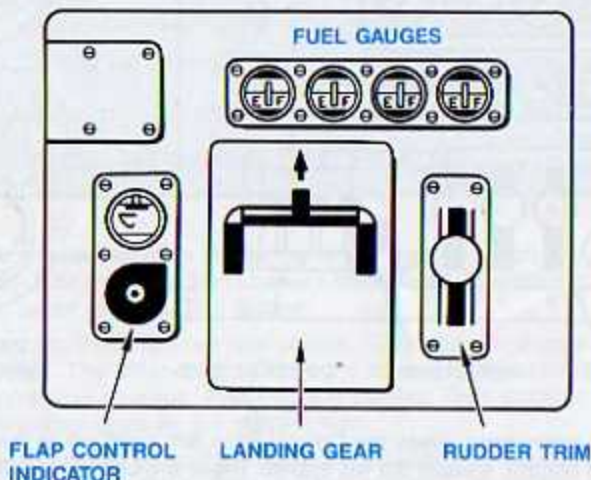
To select an instrument, press the Control Stick left, right, up or down. Under the selected control, a black dot will appear. Press the Left Side Button to gain control of the instrument. With the Left Side Button held in, press the Control Stick up or down depending on what you want to do. Release the Left Side Button to release control of the instrument.

All four throttles can be controlled at the same time as can the four boosters. To do this, choose the last booster or first throttle then press both Side Buttons at the same time. To get the last booster when entering the First Engineering screen, press the Control Stick left. Try using this maneuver during take off.

The upper-right section of the screen controls the fire extinguisher for each engine. Each fire extinguisher can be used only once. After putting out a fire, take care in restarting an engine as this may cause another fire to ignite.

The throttles control the rpm on a specific engine. The boosters control the angle of the propeller blades in relation to the airstream near the propeller. For example, a large pitch takes a larger bite of air. Setting a booster is similar to selecting a gear in a car's manual transmission. The speed of the plane can be set by any combination of booster/ throttle settings. The fastest airspeed is achieved by combination of boost and maximum throttle.

You can damage your engines by "revving" them too high and using the throttle without adjusting the appropriate booster. Too much boost with a low throttle setting results in inefficient engines and low power; this reduces your airspeed. Watch the individual gauges when increasing/decreasing the booster and throttle.



The Second Engineering screen shows the flap control indicator, landing gear and rudder trim. These instruments are controlled in a similar manner to the First Engineering screen.

The landing gear control activates the hydraulic motor control that lifts the gear. The rudder trim adjusts the direction of the aircraft to the left or right. Pressing the Control Stick up introduces a negative yaw (side-to-side motion) that turns the aircraft to the left; pressing the Control Stick down introduces a positive yaw that moves the plane to the right.

The flap switch turns the flaps on and off. The flaps are retractable extensions of the plane's wing. When the flaps are down, the wing area is larger and its lift is increased.

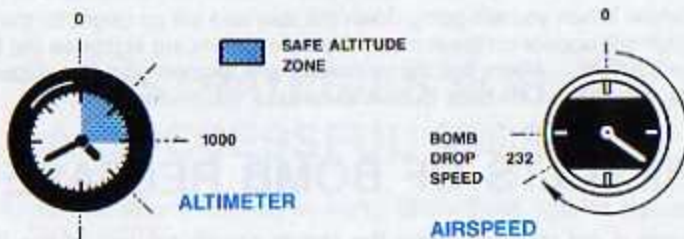
DAM APPROACH

When making your bomb-run approach, three factors must be set exactly to skip the bomb over the water:

- **Speed:** 232 mph
- **Altitude:** 60 feet
- **Distance:** 800 yards from the dam

Have the plane make a long run down the lake so that all the factors can be set. Once the factors are set, keep checking them.

Setting the Bomb Approach Factors

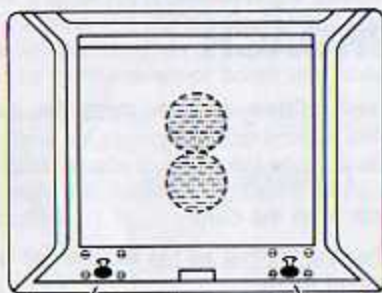


PILOT'S VIEW: AIRSPEED AND ALTIMETER FROM SCREEN 1

- **Speed:** Set the speed by adjusting the throttles. When the Airspeed Indicator blinks white, the 232 mph speed has been reached. It is advisable to set your speed well before the dam approach—perhaps over the English Channel. Try lowering the boosters until the throttle's dials start to move up. Then increase the boosters to stabilize the throttle's. This should put you right on the money!

- **Altitude:** You don't have time to make mistakes, so try to get this right the first time! Just before you reach the lake, press Keypad Button 4 to select the Bomb Aimer Screen. Turn the Bomb Rotation and the Aircraft Altitude Spotlights on. When you're just over the lake, reduce your altitude to 100 feet. Adjust the plane's altitude by pressing the Control Stick to move the spotlight circles closer together until they form a figure eight. When that happens, your altitude is 60 feet. Now press Keypad Button 2 to switch immediately to the Front Gunner's screen.

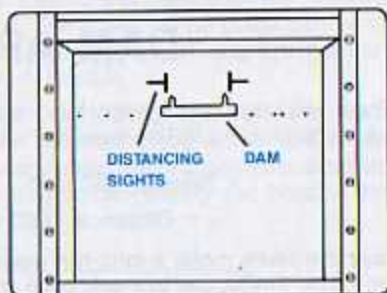
SCREEN 4: ALTITUDE ADJUSTMENT



BOMB ROTATION
SWITCH

AIRCRAFT ALTITUDE
SPOTLIGHT SWITCH

SCREEN 2: DISTANCING



RELEASE THE BOMB AT THIS POINT

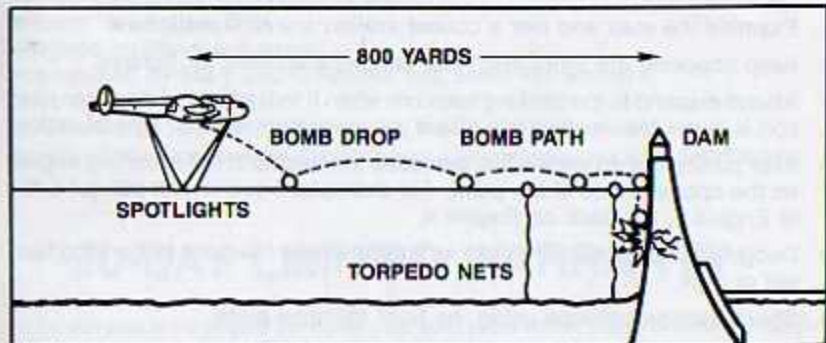
- **Distance:** When you are going down the lake and are on target for the dam, the dam will appear on the horizon. Use the distancing sights on the Bomb Aimer's screen. When the dam's towers are aligned with the distancing sights, press the Left Side Button to release the bomb.

RESULTS OF BOMB RELEASE

If the bomb is not released under the proper conditions, one of two things happens:

- If you come in too fast, too low, or release the bomb too late, the bomb hits the crest of the dam and skips into the valley beyond.
- If you come in too slow, too high, or release the bomb too soon, the bomb drops short of the dam causing a harmless explosion in the water in front of the dam.

VICTORY!



PERSPECTIVE VIEW OF BOMB RUN

If the release of the bomb is within the acceptable limits described by B.N. Wallis (see Mission Guide), the bomb skips across the water above the torpedo nets, hits the crest of the dam and sinks to a depth of 30 feet. The hydrostatic pistols ignite, detonating the bomb, and the dam is destroyed! You are promoted in rank and go on to the next, tougher round of play.

STRATEGIES FOR A SUCCESSFUL MISSION

When flying over enemy territory at night, follow these tips for a successful mission:

- Flying at an altitude of over 800 feet gives night radar a target to lock onto. Keep monitoring your altimeter.
- Flying at an altitude of under 100 feet can cause you to crash into a ground object.
- Knock out spotlights and flak installations by firing at the base of the light.
- Shoot down Me 109's or perform a corkscrew maneuver to avoid the planes. To perform the corkscrew maneuver: Dive left, pull up and climb sharply, then dive from left to right.

- Keep switching between screens. For example, over enemy territory, switch back and forth between the Front and Rear Gunner's screens. Keep checking the Pilot and Navigator's screens to check your course.
- Examine the map and plot a course around enemy installations.
- Keep checking the Front and Rear Gunner's screens for fighters.
- Always respond to the blinking intercom when it indicates that a gunner position is in trouble—even if this draws you away from another type of action.
- After putting out an engine fire, decrease the throttle in the matching engine on the opposite side of the plane. For example, if you've just put out a fire in Engine 1, cut back on Engine 4.
- Dodge ground installations such as spotlights and flak guns by banking hard left or right.
- Shoot barrage balloons using the front machine guns.
- The cable cutters on the plane's wings will cut the barrage balloon's cables most of the time before they snag on the wings. It is best to shoot them or avoid them.
- Always recheck your heading and position after trying to dodge night fighters or spotlights.

SQUADRON LEADER OPTION

After you've reviewed the Intelligence Report, pressing the Control Stick in any direction takes you to the Navigator's Screen. Before take off, examine the maps to see which areas you want to avoid and which areas have chinks in their defenses. Set the compass heading using the Navigator's Cursor for the first location you want to fly to.

CREDITS

Created by Sydney Development Corp.

Concept by Michael Bate

Designed by Steve Armstrong

Programmed by Mary Lou O'Rourke and Steve Armstrong

Graphics by Dan Hoecke

Documentation: Deborah Ritchie and Technical Publications

Thanks to the Greenhouse Dambusters—Bruce Jaquays and Jeff Rogers

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IMPORTANT: SAVE YOUR RECEIPTS SHOWING DATE OF PURCHASE.



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GN 300274

MISSION GUIDE

DAM BUSTERS™



RAF Scampton
15 May 43

F/L D.J. Shannon
RAF Albermarle
WARCS

Dear David,

This is doubtless going to come as a shock, but you're one of mine, now. We have an operation that calls for a precise number of aircraft, due to go off in less than 24 hours, and we've just lost a pilot to an auto accident. The silly bloke was watching a WAAC when he should have been looking at the oncoming lorry. Only a broken leg, mercifully, but it put him out of action just when we needed him most.

As a result, we're short one expert low-level pilot. It's a hell of a complex mission, and I'm sorry to drop you in it without special training, but it calls for a lot of treetop stuff, and you're the only one I know who can take a Lanc under Tower Bridge with the wheels down.

The timing of this thing is absolutely critical, as the weather is due to sock in day after tomorrow, so we have to have you instantly. There won't be time for even one training flight, and you'll be lucky if you make it in time for the briefing. Air Marshall Harris, therefore, has authorized me to take the extraordinary measure of sending you all this very sensitive material by means of a "Special Courier". He's frightfully touchy so approach with caution.

Please familiarise yourself with all the enclosed information on your train trip north, since it's all you're going to get. I've given you the best navigator in the squadron, and he'll help as much as he can. Engage a private compartment (if you can), as we cannot risk this classified material falling into the wrong hands now.

Sorry the package appears to be so disorganised but you'll find everything you need to know to carry out this mission included in it. I'll meet you tomorrow.

Good Luck!

Gibson
Gibson

CERTAIN ASPECTS OF HARD-CASING EXPLOSIVE BEHAVIOR AT DEPTH

By B.N. Wallis M.S.E., F.R.S.

PREFACE:

Current strategic theory holds that the bombing of enemy factories and centres of population beyond the battlefield will cause a collapse of production capacity and severe deterioration in civilian morale. The Air Targets Sub-Committee has identified three targets of special strategic significance: the Moehne, the Eder, and the Sorpe dams. All are in the Ruhr valley and account for the bulk of water supply to the monstrous German arsenal. For example, the German method of iron production needs between 100 and 150 tons of water to produce a ton of steel. These dams also provide domestic water to the Ruhr district.

The Moehne creates Moehne Lake. The level of this lake is maintained so that barges with coal and steel and tanks can travel to and from the foundries. If the dam were to be breached, the reservoir would empty 134 million tons of water in approximately ten hours into the lower Ruhr, causing wide spread disaster. There would be a serious shortage of water for drinking purposes and industrial supplies.

The Eder dams the Eder River to form Eder Lake — 212 million tons of water. It controls the level of Germany's second most important waterway, the Mittelland Canal, and prevents flooding of surrounding agricultural land and towns. Several power stations lying along the river would be damaged or destroyed by a breach in the dam, and transportation on the Mittelland would be seriously hampered to the point of a virtual cessation of traffic. The Sorpe holds a similar position of importance.

A psychological as well as physical effect will be felt, should the dam be burst. Rumours will circulate regarding disease, water shortage, and loss of firefighting capabilities.

Countervailing arguments were submitted by high-ranking officers of Bomber Command, who drew the Sub-Committee's attention to the massive construction of the German dams, against which existing weaponry would be useless. There was considerable doubt as to whether the structure could be breached even if fissures were made in a gravity-type dam (the Moehne). These dams are also protected by nets against torpedoes.

The Moehne is 112 feet thick at the base, 130 feet high and 25 feet thick at the top. The Eder, also a gravity dam, is even bigger.

It is calculated that the bomb will not ricochet if the angle of impact exceeds 30 degrees, and therefore the best height is 10-15,000 feet. At this height the average error was 102-113 yards (if a 50-yard-long portion of the dam were attacked, only a 6 % chance existed of hitting it--this is reduced to 2 % during war-time).

Nonetheless, air attacks on reservoirs and dams have been deemed so important that the Air Targets Sub-Committee desires that the issue be "treated as urgent and of pressing importance."

DEVELOPMENT

It was clear that conventional techniques were unsuitable to the destruction of these very solid objects, and that an unusual approach would be required to solve the problem. Obviously, a kind of "explosive judo" would be needed, to use the vast weight of water behind the dam to assist in its own destruction.

An underwater bomb exploded on the upstream side of the dam would use the water pressure to magnify the shockwave against the dam. Such a bomb would produce a shockwave that would travel through the side of the dam, smashing a hole through the masonry. However, experimentation revealed that if the bomb was even slightly too far upstream from the dam face when detonated, the surrounding water would damp and absorb the shockwave, making the explosion useless. A new delivery system, incorporating both weapons and techniques, was called for.

Early in 1942, I had the idea of a missile, which if dropped on the water at a considerable distance upstream of the dam would reach the dam in a series of ricochets, and after impact against the crest of the dam, would sink in close contact with the upstream face of the masonry. The germ of this idea came from a technique used by one of the greatest naval strategists of all time, Horatio Nelson, who discovered that by skipping cannon shot across the surface of the water it would gain distance and hit the target vessel just above the water line.

The bomb uses some of the same principles as a rock skipping across the water, but differs in that a rock skipping rotates along its vertical axis while the bomb rotates counter clockwise along its horizontal axis. The essential parameters in delivering such a bomb are airspeed and initial approach angle. In theory, an appropriately constructed bomb capable of being carried by a heavy bomber could be delivered using this principle. Extensive testing has proven this to be correct.

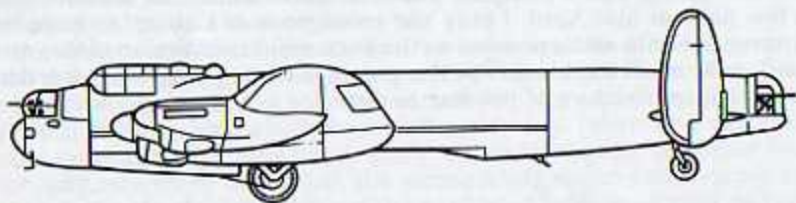
I had projected a near-spherical steel weapon seven and a half feet in diameter. But the Ministry of Supply predicted a two-year wait for steel to make the case, so we settled on a smaller cylinder. The final version of the bomb is approximately 60 in. long and 50 in. in diameter, made of 3/8 in. thick steel, weighing 2650 lbs., and containing 6600 lbs. of Torpex underwater explosive compound. There are three pistols, armed with the powerful initiating explosive Tetryl, set to explode at 30 ft., and a fourth self-destructive pistol set to go off 90 seconds after release. Total weight of the weapon is 9250 lbs.

Bomber Command, in the person of Air Marshal Harris, assures me that its personnel and equipment can deliver the weapon on target within the specified parameters. To that end, a special squadron, number 617, has been formed and is currently undergoing intensive training for the exclusive purpose of conducting this single mission. Equipped with modified Lancaster III bombers and carefully selected on the basis of their low-level expertise, the men of 617 Sqn. should have excellent chance of success. Time, however, is one of the essence, since the dams are now filling with water, and will be at the ideal highest level for only a few days in mid-April. I pray the indulgence of Cabinet to expedite this matter with all its powers, as the successful completion of this mission, will, in all likelihood, be the greatest strategic blow for freedom in the entire conduct of the war to date.

DAMBUSTING BOMB DETAIL



ED825/G carried out test dropping of the cylindrical mines, but was not selected to be one of the attacking aircraft. Underneath can be seen the mine-support pylons and belt drive mechanism for spinning the mine prior to release. The specially fitted .303 can be seen silhouetted just behind the starboard landing gear. (British Official).



LANCASTER B. MK I/III (DAM BUSTER)

This modified version of the Mark III has been especially adapted for this mission. The original Mark I/III had H2S radar, a downward looking radar, used to obtain directional bearings from the local landscape. This has been removed in the Dam Buster Lancaster to increase the bomb load capacity. The bomb bay doors were removed and faired in to allow for two v-shaped caliper arms which protrude from the front of the bomb bay. These calipers hold the mine between their points and a 20-inch diameter disk mounted on the inside of these extremities engages a track at the end of the cylinder. A hydraulic motor attached to the track (used for steering the hydroplane operator in submarines) is mounted on the floor of the fuselage. This motor is used to spin the mine backwards at the required 500 rpm.

LANCASTER Mk I (Early)

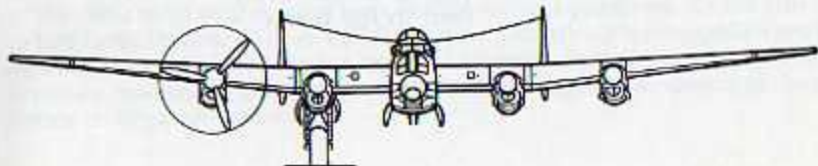
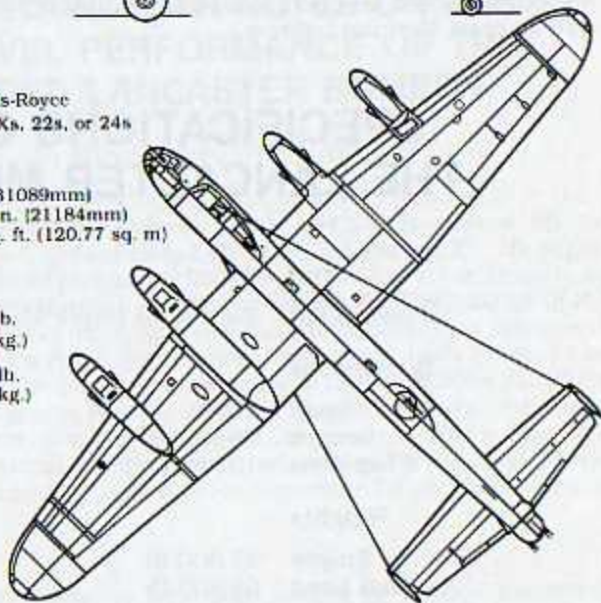
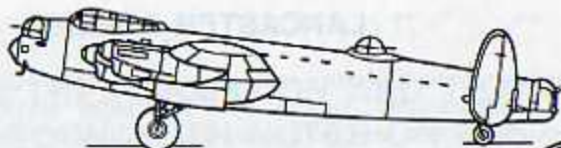
Specification

Crew	Seven
Powerplant	Four Rolls-Royce Merlin XXs, 22s, or 24s
Dimensions	
Span	102 ft. (31089mm)
Length	15 ft. 6 in. (21184mm)
Wing Area	1,300 sq. ft. (120.77 sq. m)
Weights	
Empty	37,000 lb. (16783 kg.)
Normal Load	65,000 lb. (29484 kg.)

Performance

Max. Speed	275 mph (442.5 km/hr.) fully loaded at 15,000 ft.
Service Ceiling	24,500 ft. (7467 m)
Range	2530 miles (4072 km) with 7000 lb. load (3175 kg.) 1730 miles (2784 km) with 12000 lb. load (5443 kg.)

Armament	Eight 0.303 (7.7 mm) machine guns Two in nose turret Two in dorsal turret Four in tail turret
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LANCASTER BOMBER

Because of the difficulty and importance of the mission the latest and most sophisticated bomber, the Lancaster Mark III, was chosen. Although it was a bomber, according to Gibson it could manoeuvre as well as most German fighters.

SPECIFICATIONS OF THE LANCASTER MK III

Crew Seven

Powerplant Four Rolls-Royce Merlin 24s

Dimensions

Span 102 ft.

Length 59 ft. 6 in.

Wing Area 1300 sq. ft.

Weights

Empty 37,000 lb.

Normal Load 65,000 lb.

Performance

Max. Cruising Speed 275 mph

Service Ceiling 24,000 (with special superchargers)

Range 2530 miles with 7000 lb. load

1730 miles with 12000 lb. load

Armament Eight 0.303 machine guns

Two in nose turret

Two in dorsal turret

Four in tail turret

REPORT ON THE FORMATION AND TRAINING OF 617 SQDN. WITH NOTES ON THE LOW-LEVEL PERFORMANCE OF THE MODIFIED LANCASTER BOMBER

By Guy Gibson, W/C, RAF.

Wing Commander Guy Gibson, DSO, DFC, was chosen by Air Marshall Harris as Commanding Officer of "Squadron X". He began assembling the hand-picked crew, some of whom were chosen by Gibson himself, at Scampton Airfield on March 21, 1943. Some of the crew members have completed more than ten operations (an operation is 25 bombing sorties) over enemy territory. Gibson himself has completed 23 operations. The crews range in age from 20 to 32. There are currently 21 pilots serving with 617 — three from the Royal Australian Air Force, five from the Royal Canadian Air Force, one from the Royal New Zealand Air Force, and twelve from the Royal Air Force. This last figure includes two U.S.-born Squadron Leaders, Young and McCarthy.

The speed with which the squadron had to be formed presented various difficulties. Initial facilities at Scampton were quite limited, and indeed, until the arrival of the Type 464 Provisioning Lancasters, only ten aircraft on loan from other squadrons were available to the men. Their accommodations were less than luxurious, being a group of condemned wooden billets of First World War vintage. Each hut housed 24 men. In the interests of bringing the motley group together, it was suggested that each night they do callisthenics before retiring. A newcomer to the crew who arrived one evening in the midst of these exercises was convinced that he had "stumbled on an annex of the local mental institution".

The 700 men of the squadron raided other squadrons for furniture — beds and chairs. With A/V/M Cochrane's intervention, supplies such as uniforms and blankets for the 617 were given top priority. Official pressure resulted in the appearance of spark plugs, tools, starter motors, bomb trolleys and winches.

On March 27, 1943, I was issued with "most secret" written orders, which outlined the plan of attack without naming the targets.

"No. 617 Squadron will be required to attack a number of lightly defended special low level targets over enemy territory in moonlight with a final approach to the target at 60 ft. at a precise speed, which will be about 240 mph."

It was noted that the exact speed would be determined later and visibly might well "not exceed one mile". It was assumed that aircraft would be despatched at ten-minute intervals to attack the first target. When this was destroyed, subsequent aircraft would be diverted in the air to the next target and so we had to ensure that navigation was accurate in moonlight, at a height which would be secure as possible against fighter attack. Air position indicators would be available, but training was to proceed without them. Accordingly, the squadron has been performing low-level night flying exercises almost nonstop to date. The efficiency attained in these areas has been most gratifying.

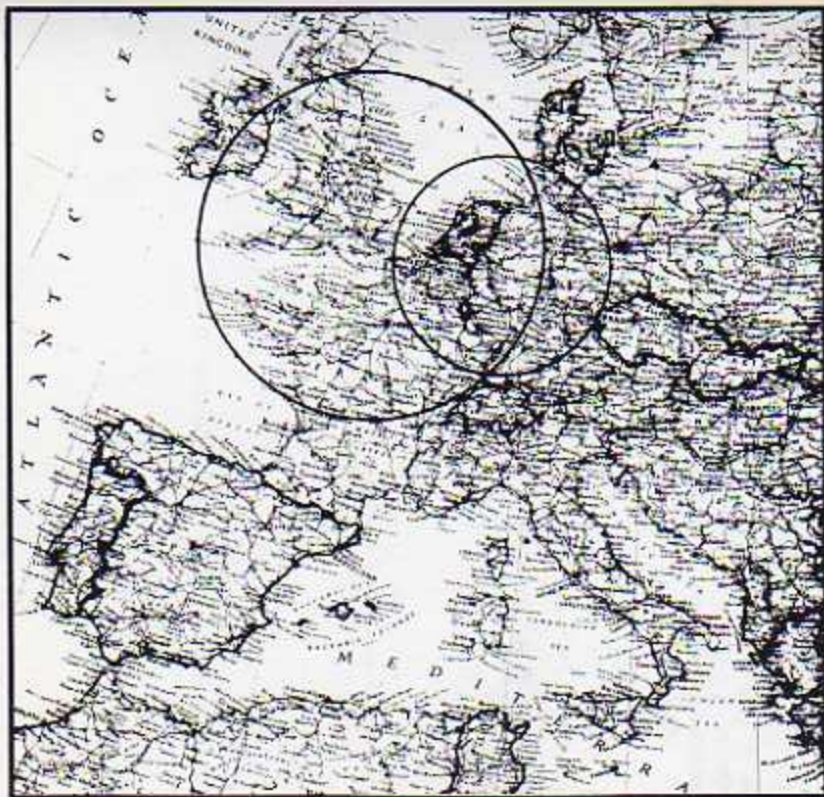
According to Barnes Wallis's specifications of the delivery of the bomb, each Lancaster must release the bomb at 240 mph, 60 ft. above water and exactly 800 yds. away from the dam.

Visual sighting at night is difficult to impossible because of the existence of a sort of grey no-man's land between the surface of the water and the aircraft flying so close at high speed. Several different techniques were tried and all were rejected due to measuring error impracticality. Finally, a simple solution was found, using two spotlights, one at either end of the aircraft. As the aircraft flies over the water, the spots shine down upon the surface of the water. The spotlights are angled such that when the two spotlights touch, the aircraft is flying at 60 ft. with virtually no error.

The distancing problem had a similar trivial solution involving angles. The front gunner, using the bomb aimers bubble, will sight on the twin towers of the dam, through a Y shaped distancing sight. When the twin towers of the dam align with the markers on the end of the sight, the aircraft is exactly 800 yds. from the dam, again with virtually no error.

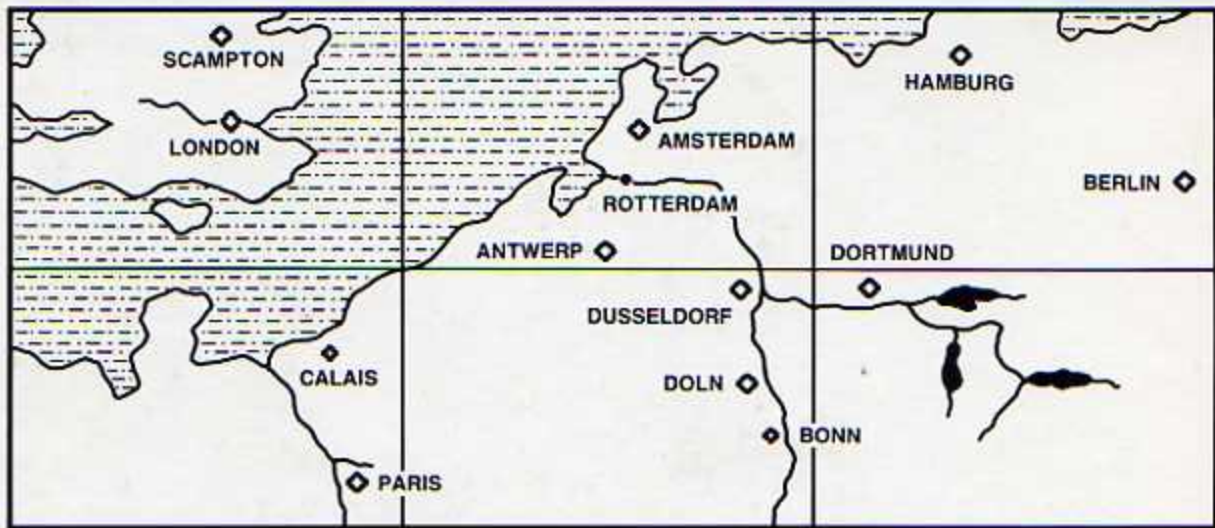
The conventional airspeed indicator used by the Lancaster is accurate enough to render an airspeed reading within acceptable tolerances.

Therefore, I have the honour to report that 617 Squadron is, in all respects, ready for battle.



OPERATION CHASTISE
May 16, 1945





COLECO
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THE DAM BUSTERS™

NOTE: If you pass over the dam without dropping the bomb, the game is over, and you automatically lose. For another mission, reset game.

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